AC NO: 90-58C

DATE: 4/7/75



## ADVISORY CIRCULAR

## DEPARTMENT OF TRANSPORTATION FEDERAL AVIATION ADMINISTRATION

SUBJECT: vor course errors resulting from 50 kHz channel misselection

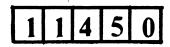
- 1. PURPOSE. This circular provides information concerning a potentially serious situation when a 200 channel VOR receiver is inadvertently mistuned by 50 kHz from the frequency of a 100 kHz VOR ground station,
- 2. CANCELLATION. Advisory Circular 90-58B dated September 12, 1974.
- 3. BACKGROUND. The possibility of an erroneous course indication exists, at least for certain types of 200 channel airborne receivers, when the receiver is inadvertently mistuned 50 kHz from the ground station frequency. (THIS PROBLEM DOES NOT EXIST WITH 100 CHANNEL RECEIVERS.) This condition is due to radiation of harmonics of the 9960 Hz modulation from the ground station. When such harmonics exist, they may be received and detected by the aircraft's navigation receiver. The indications produced can appear to be useful information. The ground station identification may be heard, the flag alarm hidden and a course. indication displayed. The course indication will probably be near the 180 degree radial (from) or its reciprocal 360 degrees (to), and will not vary as the position of the aircraft is changed with respect to the VOR ground station.
- 4. DISCUSSION. Several methods are being investigated to provide the pilot a warning indication when a mistuning or misselection error has occurred. A method that has been successful in greatly reducing the probability of off channel course indication is the "ADJACENT CHANNEL SENSOR." This method involves detection of an off frequency condition of 50 kHz from the desired VOR frequency and causes a flag to appear at the pilot indicator. This type of modification may be adaptable to various 50 kHz VOR receivers. Equipment users may consult their equipment manufacturer for possible modifications to existing equipment that would provide the warning flag.

Initiated by: AFS-804

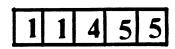
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5. PRECAUTION. Until a totally effective **mistuned/misselection** sensor modification is developed for various types of receivers, the **possibility** of false course information being displayed when **a 200** channel receiver is off-tuned by **50 kHz** will continue. All pilots are therefore cautioned to observe the following:

- a. Exercise extreme care in the initial selection of the correct frequency numbers on **the VOR** receiver channel selector panel.
  - b. If the identification tone sounds unusually garbled or noisy, reconfirm the channel selection to the correct frequency numbers.
  - c. Be particularly alert to the CDI, and FLAG indications after changing the frequency numbers from one VOR ground station to the frequency numbers of the next VOR ground station.



In **200** channel equipment the last digit is zero for selection of a **100** kHz channel frequency.



In 200 channel equipment the last digit is a five for selection of a 50 kHz channel frequency. Misselection of the last digit may mistune the VOR receiver by 50 kHz.

The above example is for only those receivers with **five-digit** frequency **selectors**.

d. Those aircraft with DME capability that have a common VOR/DME channel selector will not display distance information when the VOR channel selector is mistuned by 50 kHz from the frequency of a VOR ground station that has a co-located DME.

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